**Syllabus**

**Power System Design**

**Course Code- 031814**

**1. Per unit system representation**, reactance diagram, impedance diagram. **Lecture : 5**

**2. Load flow Analysis**; Load flow problem, ybus, Formulation of problem, solution technique using Gauss seidel method **Lecture : 7**

**3. Symmetrical short circuits Analysis**; Short circuit of a Synchronous machine on no load, Short circuit of loaded synchronous machine, Thevenin's equivalent circuit approach for short circuit analysis **Lecture : 7**

**4. Symmetrical component**; Transformation, phase shift in star-delta transformer, sequence Impedance and sequence network of transmission line, Synchronous machine, Transformer and power system. **Lecture : 8**

**5. Unsymmetrical Short Circuits**; Symmetrical component analysis of unsymmetrical short Circuits, single line to ground fault, Double line to ground fault and line to line fault.

**Lecture : 7**

**6. Power system stability problem**, Swing equation, System response to small disturbances, Power angle equation and diagram **Lecture : 6**

**7. Transient stability**, Equal area criterion, Measures for improving transient stability **Lecture : 5**

**GATE Syllabus:**

**Section 6: Power Systems**

Power generation concepts, ac and dc transmission concepts, Models and performance of transmission lines and cables, Series and shunt compensation, Electric field distribution and insulators, Distribution systems, Per‐unit quantities, Bus admittance matrix, Gauss-Seidel and Newton-Raphson load flow methods, Voltage and Frequency control, Power factor correction, Symmetrical components, Symmetrical and unsymmetrical fault analysis, Principles of over‐current, differential and distance protection; Circuit breakers, System stability concepts, Equal area criterion.